

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

## AMENDMENTS TO THE CLAIMS

Claim 1 (Currently amended) A jet in flow communications with a reservoir comprising:

5 a substrate having a manifold for receiving fluid from the reservoir;

an orifice layer disposed above the substrate so that a plurality of chambers are formed between the orifice layer and the substrate; and

10 a plurality of nozzles that are disposed on the orifice layer and correspond to the plurality of chambers for ejecting the fluid in the chambers so as to form a plurality of droplets, each of the nozzles comprising:

15 an orifice formed on the orifice layer; and at least three distinct bubble generators

electrically connected to a driving circuit and disposed at a first side of the orifice and a second side of the orifice, at least two

20 of the bubble generators disposed at one of either the first side or the second side, and at least one of the bubble generators disposed at the other of the first side and the second side, the driving circuit driving the bubble

25 generator(s) disposed at the first side to generate a first bubble in a corresponding chamber and driving the bubble generator(s) disposed at the second side to generate a second bubble in the corresponding chamber;

30 wherein the driving circuit drives the bubble generators selectively so that each of the nozzles is capable of ejecting droplets of different sizes.

Claim 2 (original) The jet of claim 1 wherein an interval between the manifold and the first side is less than an interval between the manifold and the second side.

5

Claim 3 (original) The jet of claim 2 wherein the first bubble is used as a virtual valve for restricting fluid between the first bubble and the second bubble to avoid flowing to the manifold when the second bubble is generated.

10

Claim 4 (original) The jet of claim 1 wherein each of the bubble generators is a heater, the driving circuit drives the heater(s) disposed at the first side to heat fluid in the corresponding chamber so as to generate the first bubble, and the driving circuit drives the heater(s) disposed at the second side to heat fluid in the corresponding chamber so as to generate the second bubble.

20

Claim 5 (original) The jet of claim 4 wherein an interval between the manifold and the first side is less than an interval between the manifold and the second side.

25 Claim 6 (original) The jet of claim 5 wherein the first bubble is used as a virtual valve for restricting fluid between the first bubble and the second bubble to avoid flowing to the manifold when the second bubble is generated.

30

Claim 7 (original) The jet of claim 4 wherein there is at least one heater disposed at the first side

and connected in series to one of the heater(s) disposed at the second side, wherein resistance of the heater disposed at the first side is greater than resistance of the heater disposed at the second side.

5

Claim 8 (original) The jet of claim 7 wherein each of the heater(s) disposed at the first side connects in series to one of the heater(s) disposed at the second side.

10

Claim 9 (original) The jet of claim 7 wherein at least two heaters are disposed at the first side, and each of the nozzles comprises a leading wire for connecting one of the heater(s) disposed at the second side with the heaters disposed at the first side, and the driving circuit applies a voltage on at least one of the heaters disposed at the first side to generate the first bubble and the second bubble simultaneously.

20

Claim 10 (original) The jet of claim 7 wherein at least two heaters are disposed at the second side, and each of the nozzles comprises a leading wire for connecting one of the heater(s) disposed at the first side with the heaters disposed at the second side, and the driving circuit applies a voltage on at least one of the heaters disposed at the second side to generate the first bubble and the second bubble simultaneously.

30

Claim 11 (original) The jet of claim 4 wherein there is at least one heater disposed at the first side

connected in parallel to one of the heater(s)  
disposed at the second side, wherein a resistance  
of the heater disposed at the first side is less  
than a resistance of the heater disposed at the  
5 second side.

Claim 12 (original) The jet of claim 4 wherein the orifice  
layer comprises at least two structure layers  
arranged in parallel, and there is at least one  
10 heater disposed on each of the structure layers.

Claim 13 (original) The jet of claim 12 wherein the  
droplets are ejected from the orifice along an  
ejection direction, and at least two of the heaters  
15 are disposed on the two structure layers linearly  
along the ejection direction.

Claim 14 (original) The jet of claim 1 wherein the  
droplets are ejected from the orifice along an  
ejection direction, and the bubble generators are  
20 disposed in parallel at the first side and the second  
side.

Claim 15 (original) The jet of claim 1 wherein the bubble  
25 generator(s) disposed at the first side are arranged  
along a first straight line, the bubble generator(s)  
disposed at the second side are arranged along a  
second straight line, and the first straight line  
is parallel to the second straight line.

30

Claim 16 (currently amended) A jet in flow communication  
with a reservoir comprising:

an orifice disposed above the reservoir;  
a first bubble generator group disposed at a first  
side of the orifice for generating a first bubble  
in the reservoir, ~~the first bubble is used as~~  
5 ~~a virtual valve to restrict fluid to avoid flowing~~  
~~to the manifold;~~

a second bubble generator group disposed at a second  
side of the orifice for generating a second bubble  
in the reservoir, the first bubble and the second  
10 bubble squeezing fluid between the first bubble  
and the second bubble out of the orifice to form  
a droplet;

wherein the first bubble generator group or the  
second bubble generator group comprises at least  
15 two independently drivable bubble generators for  
generating the first bubble or the second bubble,  
and the other of the first bubble generator group  
or the second bubble generator group comprises at  
least one distinct bubble generator.

20

Claim 17 (original) The jet of claim 16 wherein each  
of the bubble generators is a heater.

25

Claim 18 (original) The jet of claim 16 wherein an  
interval between the orifice and one of the two  
bubble generators is different from an interval  
between the orifice and the other one of the two  
bubble generators.

30

Claim 19 (New) The jet of claim 1 wherein a resistance  
value of each of the bubble generator(s) disposed  
at the first side is different from a resistance

value of each of the bubble generator(s) disposed at the second side.

5        Claim 20 (New) The jet of claim 1 wherein each of the three bubble generators has a unique resistance value.

10        Claim 21 (New) The jet of claim 16 wherein a resistance value of each of the bubble generator(s) in the first bubble generator group is different from a resistance value of each of the bubble generator(s) in the second bubble generator group.

15        Claim 22 (New) The jet of claim 16 wherein each of the bubble generators in the first bubble generator group and the second bubble generator group has a unique resistance value.

20        Claim 23 (New) The jet of claim 16 further comprising a manifold for receiving fluid from the reservoir, wherein the first bubble is used as a virtual valve to restrict fluid to avoid flowing to the manifold.

25        Claim 24 (New) The jet of claim 16 further comprising a driving circuit electrically connected to the bubble generators and wherein each of the bubble generators is a heater, the driving circuit drives the heater(s) disposed at the first side to heat fluid so as to generate the first bubble, and the driving circuit drives the heater(s) disposed at the  
30        second side to heat fluid so as to generate the second bubble.

Claim 25 (New) The jet of claim 24 wherein there is

at least one heater disposed at the first side and  
connected in series to one of the heater(s) disposed  
at the second side, wherein resistance of the heater  
disposed at the first side is greater than resistance  
5 of the heater disposed at the second side.

Claim 26 (New) The jet of claim 25 wherein each of the  
heater(s) disposed at the first side connects in  
series to one of the heater(s) disposed at the second  
10 side.

Claim 27 (New) The jet of claim 25 wherein at least  
two heaters are disposed at the first side, the jet  
further comprising a leading wire for connecting one  
15 of the heater(s) disposed at the second side with  
the heaters disposed at the first side, and a driving  
circuit applies a voltage on at least one of the  
heaters disposed at the first side to generate the  
first bubble and the second bubble simultaneously.

20 Claim 28 (New) The jet of claim 25 wherein at least  
two heaters are disposed at the second side, the  
jet further comprising a leading wire for connecting  
one of the heater(s) disposed at the first side with  
25 the heaters disposed at the second side, and a  
driving circuit applies a voltage on at least one  
of the heaters disposed at the second side to  
generate the first bubble and the second bubble  
simultaneously.

30 Claim 29 (New) The jet of claim 24 wherein there is  
at least one heater disposed at the first side

connected in parallel to one of the heater(s)  
disposed at the second side, wherein a resistance  
of the heater disposed at the first side is less  
than a resistance of the heater disposed at the  
5 second side.

Claim 30 (New) The jet of claim 24 wherein the orifice  
is formed in an orifice layer comprising at least  
two structure layers arranged in parallel, and there  
10 is at least one heater disposed on each of the  
structure layers.

Claim 31 (New) The jet of claim 30 wherein the droplet  
is ejected from the orifice along an ejection  
15 direction, and at least two of the heaters are  
disposed on the two structure layers linearly along  
the ejection direction.

Claim 32 (New) The jet of claim 16 wherein the droplet  
20 is ejected from the orifice along an ejection  
direction, and the bubble generators are disposed  
in parallel at the first side and the second side.

Claim 33 (New) The jet of claim 16 wherein the bubble generator(s)  
25 disposed at the first side are arranged along a first  
straight line, the bubble generator(s) disposed at the  
second side are arranged along a second straight line, and  
the first straight line is parallel to the second straight  
line.

30